NM30LA
User Manual – Revision 6

User Manual

High Purity Nitrogen Generator

NM30LA 230Vac
Gas Station
(19" Rack System)

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Document Change History

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6	Connection Diagram Updated	HD	10-04-03

Warranties and Liabilities

1) The Company warrants that it has title to the Goods.

2) Subject to the provisions of this clause the Company warrants that the Goods shall comply in all material respects with any specification referred to in the Order Confirmation (as the same may be amended) and shall, subject thereto, be free from defects in material and workmanship for the lesser of a period of twelve months from the date of delivery or thirteen months from the date of dispatch from the factory.

3) Save as provided in this clause and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by statute or common law are hereby expressly excluded save to the extent they may not be lawfully excluded. When the Goods are sold to a consumer within the meaning of the Unfair Contract Terms Act 1977 their statutory rights are not affected by the provisions of this clause.

4) In the event of the Customer making a claim in respect of any defect in terms of clause 2 hereof the Customer must:-

   4.1) reasonably satisfy the Company that the Goods have been properly installed, commissioned, stored, serviced and used and without prejudice to the generality of the foregoing that any defect is not the direct or indirect result of lack of repair and/or servicing, incorrect repair and/or servicing, use of wrong materials and/or incorrect spare parts; and

   4.2) allow the company to inspect the Goods and/or any installation and any relevant packaging as and when reasonably required by the Company.

5) Subject to the Company being notified of any defect as is referred to in sub-clause 2 hereof within a reasonable time of it becoming apparent and subject always to the terms of sub-clause 4 hereof, the Company shall, in its option, replace or repair the defective Goods or refund a proportionate part of the Price. The Company shall have no further liability to the Customer (save as mentioned in sub-clause 6 hereof).

6) The Company shall be liable to indemnify the Customer in respect of any claim for death or personal injury to any person in so far as such is attributable to the negligence or breach of duty of the Company or any failure by the Company to comply with the provisions of sub-clause 2 hereof.

7) Save as provided in sub-clause 2 hereof the Company shall not be liable in respect of any claim by the Customer for costs, damages, loss or expenses (whether direct, indirect, consequential or otherwise) or indemnity in any respect howsoever arising including, but not by way of limitation, liability arising in negligence (other than pursuant to clause 6 above) that may be suffered by the Customer or any third party,

SAFETY NOTICE TO USERS

These instructions must be read thoroughly and understood before installation and operation of your Peak Nitrogen Generator. Use of the Generator in a manner not specified by Peak Scientific Inst. MAY impair the SAFETY provided by the equipment.

When handling, operating or carrying out any maintenance, personnel must employ safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of UK users is drawn to the Health and Safety at Work Act 1974, and the Institute of Electrical Engineers regulations.

WARNING: Nitrogen is not a poisonous gas, but if the concentration in the inhaled air becomes too high there will be a risk of asphyxiation.

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1 Introduction

Welcome to the Service Manual for the Peak Scientific Instruments NM30LA Laboratory Gas Generator. Enclosed in this manual you will find the information required to ensure that your generator is operated & serviced according to our recommended guide lines which will prepare you for long and trouble free gas generation.

Please review each of the following sections carefully and ensure that an Operational Validation Report is completed in full after every service task is performed and that the maintenance log at the rear of this manual is updated for future reference (Complete IQ/OQ procedures are available from the factory).

Thank you for selecting **Peak Scientific Instruments (PSI)** to meet your Gas Generation needs, and should you require any further assistance or support please do not hesitate to contact us at the addresses displayed on the front cover of this manual.

2 Unpacking and Installation.

Although Peak Scientific takes every precaution with safe transit and packaging, it is advisable to fully inspect the unit for any sign of transit damage.

ANY DAMAGE SHOULD BE REPORTED IMMEDIATELY TO THE CARRIER AND PEAK SCIENTIFIC OR THE DISTRIBUTOR FROM WHERE THE UNIT WAS PURCHASED.

Follow the un-packing instructions posted on the side of the crate. It will require 2 people to lift the crate clear and to maneuver the generator onto the floor. Thereafter the generator can be moved to its final location on the castors provided.

Note:- Included with the generator is a pack containing keys, manuals, service filters & fittings. Be careful not to discard these with the packing.

Please save the product packaging for storage or future shipment of the generator.

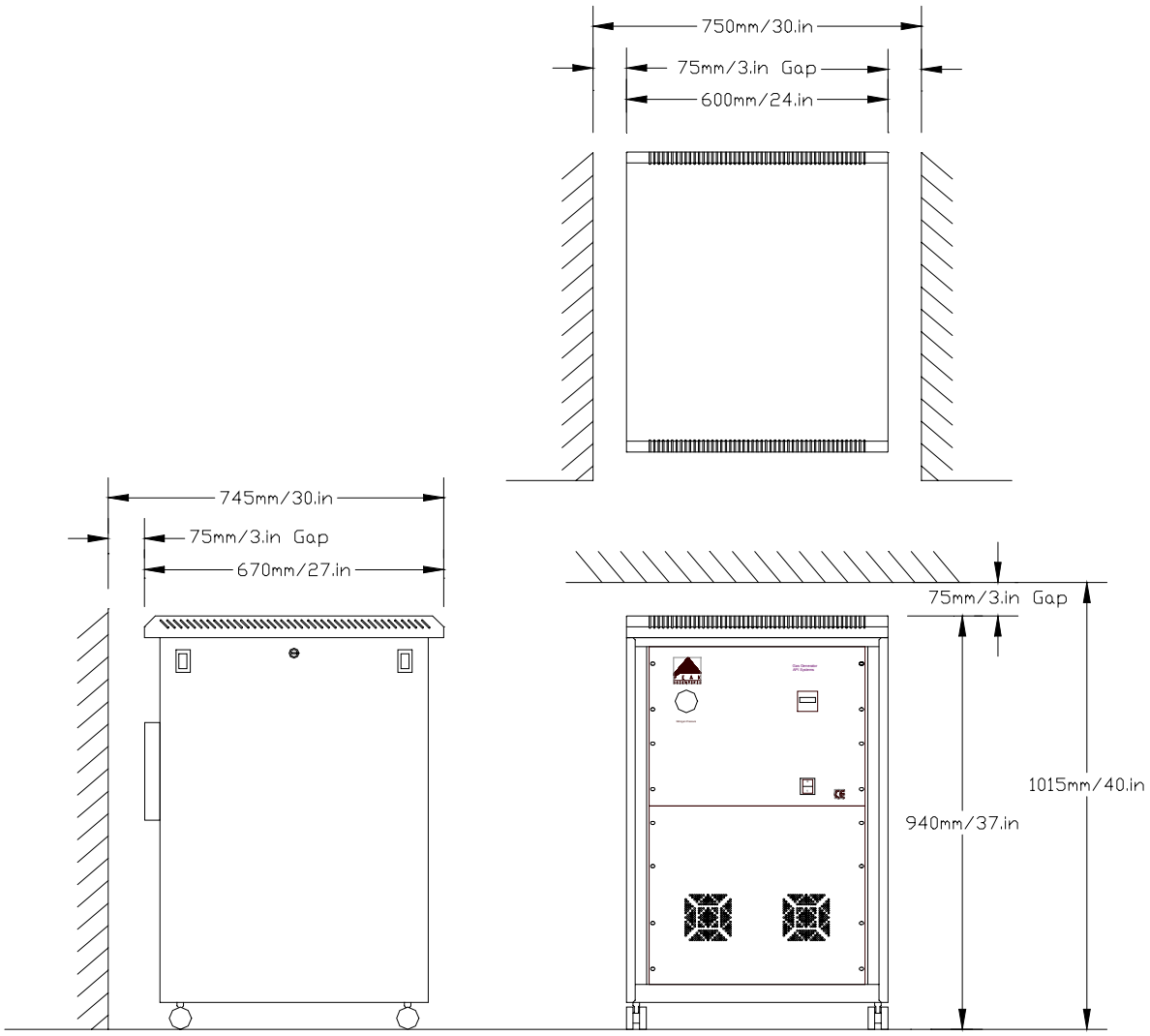
3 Generator Environment

The generator in designed to be installed adjacent to the Mass Spectrometer it is supplying. If this is not convenient then the generator can be sited elsewhere, however, consideration should be made of the lengths of pipe runs as pressure drops can result from extended runs of pipe.

Performance of the generator (like all sophisticated equipment) is affected by ambient conditions. Continuous operation in ambient temperatures exceeding 25°C will lead to a reduction in capacity and prolonged operation in temperatures exceeding 30°C will shorten the life of the unit. Note should also be taken to the proximity of Air Conditioning outlets. These can sometimes give rise to "pockets" of air with high relative humidity. Operation of the generator within such a pocket could adversely affect its performance. Consideration should also be given to the air flow around the unit. It is recommended that an air gap of 75mm (3") should be maintained down both sides and across the top of the unit. Please refer to the drawing below for the general dimensions of the generator.

MAXIMUM AMBIENT CONDITIONS:- **30°C (dry bulb) 70%RH (Max)**

General Dimensions

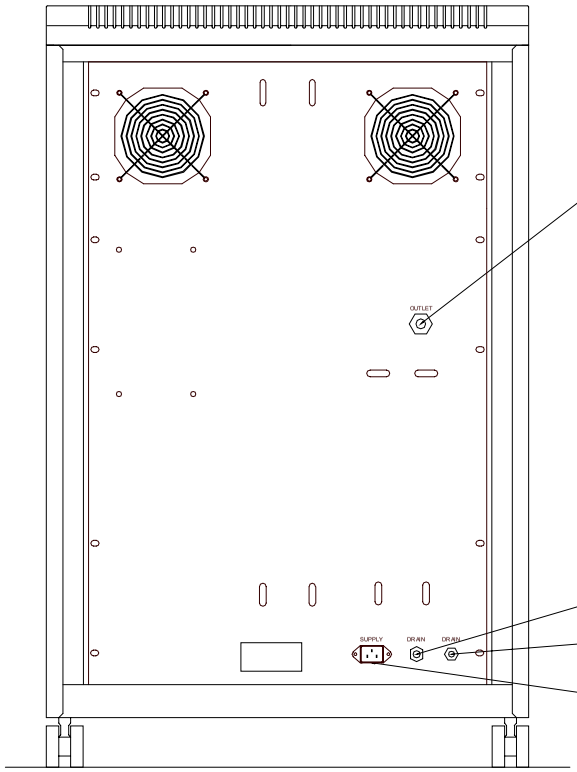


4 NM30LA – Technical Specification

Generator Environment	
Minimum Operating Ambient Temperature	5 °C (41 °F)
Maximum Operating Ambient Temperature	30 °C (86 °F)
Maximum Relative Humidity	70%
Outlet Gas	
Maximum Gas Outlet Pressure	100 psig (6.8 barg / 680 kPa)
Maximum Gas Outlet Flow	30 Litres/min (ATP)
Start up time for Purity	60 minutes
Particles	0.01um
Electrical Requirements	
@230V±10% ac (50/60Hz)	5.0 Amps
Compressor Circuit Breaker	8.0 Amps
Control Circuit Breaker	2.0 Amps
Electrical Connection	Single Phase Power Cord
General	
Dimensions W x D x H cm (inches)	60 x 67 x 94 (24 x 27 x 37)
Weight Kg (lbs)	112.5 (248)
Shipping Weight Kg (lbs)	171 (377)

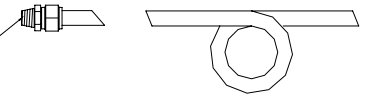
5 Connection to the Instrument

Rear View.

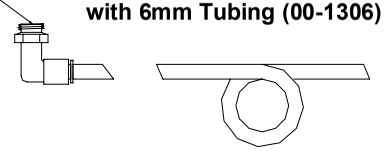


Depending on what connection your Instrument has at the inlet. You will require Either.

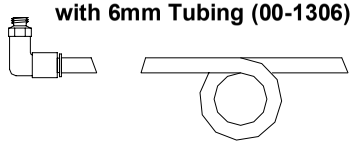
1 off 1/4" x 1/4" Compression Fitting (02-4421) with 1/4" Tubing (00-1266)



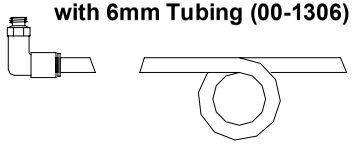
1 off 1/4" x 6mm Push-Fit (02-4331) with 6mm Tubing (00-1306)



1 off 1/8" x 6mm Push-Fit (02-4330) with 6mm Tubing (00-1306)

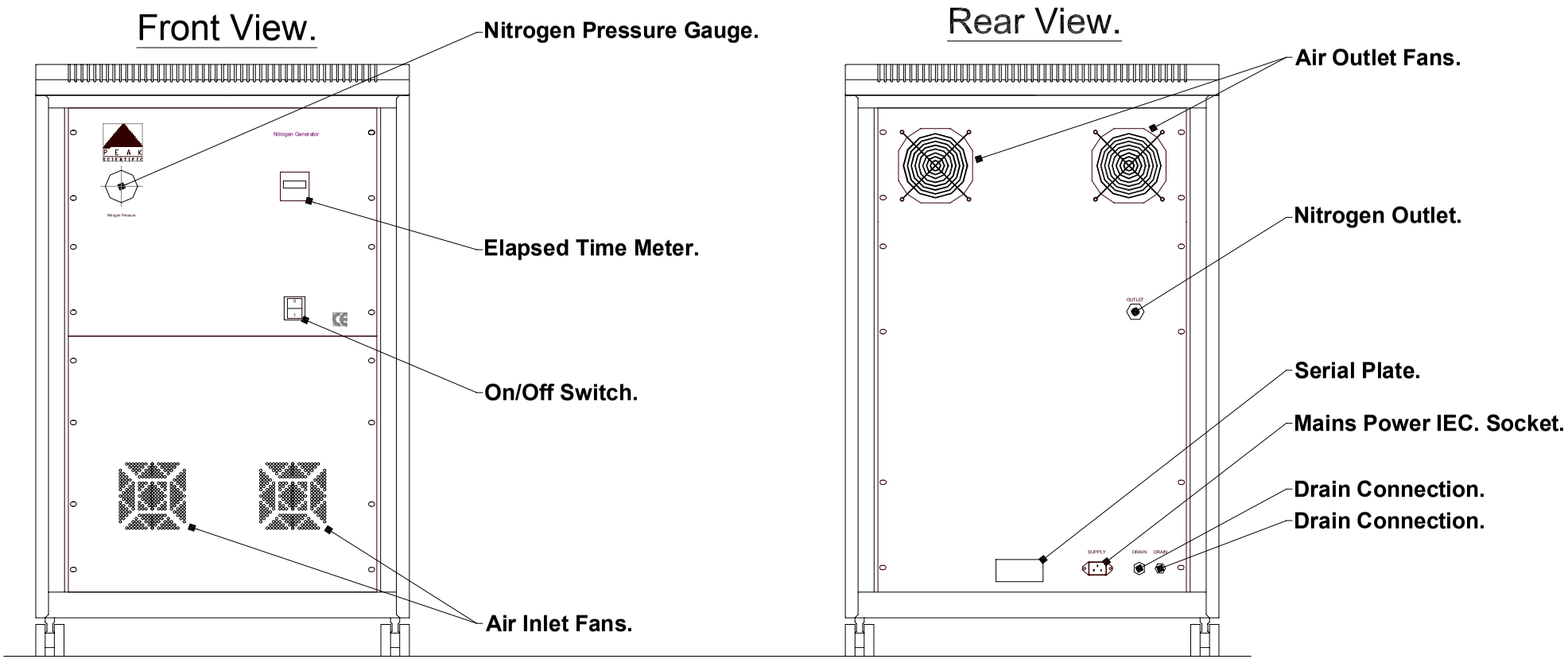


1 off 1/8" x 6mm Push-Fit (02-4330) with 6mm Tubing (00-1306)



Power Cord
(04-1038-EU)
(04-1029-US)
(04-1030-UK)
230Vac

6 Generator Controls



7 Electrical Connection

Important Electrical Notice

This unit is classified as **SAFETY CLASS** 1 equipment**. THIS UNIT MUST BE EARTHED.** Before connecting the unit to the mains supply, please check the information on the serial plate. The mains supply must be of the stated AC voltage and frequency.

The Electrical requirement is 230Vac (50/60 Hz), 5.0 Amps

EARTH/GROUND (E):-	**Green & Yellow**	**OR.**	**Green**
LIVE (L):-	**Brown**		**Black**
Neutral (N):-	**Blue**		**White**

Connect the generator to a single-phase supply using the power cord provided.

8 Operator Training

The NM30LA Laboratory Gas Generator is designed specifically to minimize operator involvement. Given that the generator is installed as described in earlier sections and is serviced in accordance with the following maintenance recommendations then it should simply be a matter of turning the generator on. The generator will automatically produce the factory default flow and pressure noted below.

NITROGEN OUTLET	30 litres per min (ATP)	100 PSI.G (680kPa)

Should the demand for gas be less than the rated flow then the generator will automatically regulate the internal pressure and cycle of the compressors as required. This should be all the input your generator requires from you, the only additional tasks required are,

- If at any time the generator begins to emit excessive noise or vibration, then it should be switched off and you should contact your local representative, or the factory as soon as possible.
- Please ensure that both the drain ports at the rear of the generator are led to a suitable connection or container. It should be noted that the generator will liberate considerable amounts of water from these ports (approx. 1-2 liters weekly). If a container is used it should be emptied at regular intervals.
- Ensure that the generator is serviced in accordance with the following maintenance recommendations.

9 Maintenance Schedule.

WARNING: Servicing and/or repair of the Generator should only be undertaken by a TECHNICALLY COMPETENT PERSON with the Generator safely isolated.

Due to the simplicity of the design and the small number of moving parts the NM Series Nitrogen Generator will have a long and trouble free life. However the following components should be replaced as follows:

Compressor Inlet Filters	**Every 6- months**
Filter Separator Elements	**Every 12- months**
Compressor Units (the lesser of)	**Every 6000 hours or 18- months**

Service kits are available for all routine maintenance, please contact the factory for further details.

FAILURE TO FOLLOW THE PRESCRIBED MAINTENANCE PLAN WILL INVALIDATE THE PRODUCT WARRANTY

10 START-UP Sequence.

With the generator installed as described previously, disconnect the outlet port from the instrument **(ENSURING THAT ANY INTERNAL PRESSURE HAS BEEN SAFELY DISSIPATED)**, and switch the generator on. The on/off switch should illuminate and the cooling fans should start immediately. There will be a 10 second delay before the first compressor starts, then after a further 3 seconds the second compressor should also start. The pressure gauge on the front panel will begin to climb, and after approx 3 minutes the gauge should reach the rated pressure of 100 PSI.G (680 kPa). The output flow from the generator should now be measured to ensure it conforms to the specification below.

OUTLET Flow 30 litres per min (ATP)

The generator should now be left to run for approx. 1 hour to allow the generator to fully flush the internal receivers etc. of air and allow the membranes to stabilize. After this time the OUTLET can be re-connected to the instrument and the interconnecting pipework checked carefully for leakage.

Notes:

12 Maintenance Log

Model- NM30LA. Serial number:

Work Done	Remarks	Date	Name